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Dated: October 29, 2008 Signature: \_\_\_\_\_  
(Eileen Sheffield)

Docket No.: DNAG-297 (10416196)  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of: Jürgen Specht et al.

Application No.: 10/519,006

Group Art Unit: 1793

Filed: July 9, 2003

Examiner: Wyszomierski, G.  
Lois Zheng

For: METHOD FOR COATING METALLIC  
SURFACES

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA. 22313-1450

Dear Sir:

**DECLARATION UNDER RULE 132**

Sir:

1. I am Thomas Kolberg, Laboratory Manager in Global Technology in the art of Surface Treatment at Chemetall GmbH. I had studied chemistry at the University of Applied Science Darmstadt and gained a diploma for Chemical Engineering at Darmstadt. I am working for Chemetall GmbH in the field of Surface Treatment since 1989, most of the years in R&D and Global Technology. I had worked for several years mainly with zinc phosphatings. I am a named inventor of both of the publications cited against the above-captioned patent application.

2. I am familiar with the above mentioned patent application, and I am familiar with the Office Action dated June 7, 2009. I have studied the above mentioned patent application, and I have reviewed the cited references Gehmecker et al. (US 6,168,674 B2) and Schubach et al. (US 6,497,771 B1).

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3. Specht et al. relates to a method of phosphating of metallic surfaces, of which at least 5 % of these surfaces are surfaces of aluminum or aluminum alloys or both. Especially in automobile industry, the percentage of surfaces of aluminum rich materials to be coated has increased significantly. Such zinc phosphating may be especially used for the treatment or pretreatment of carbodies. Because of the growing proportion of surfaces of aluminum rich materials, new problems had arisen which had not been observed in former times.

4. By the pretreatment of aluminum rich materials with zinc phosphating, the cations of the metallic surfaces are pickled out and concentrate partially in the generated phosphate coating, or in the aqueous phosphating solution or in both. Cations of aluminum are well known in the art of zinc phosphating to be a bath poison. Few ppm, often about 10 - 25 ppm = 0,010 - 0,025 g/L, of aluminum cations are already sufficient to cause poor coating on steel and on aluminum rich substrates. Therefore, R&D work had been performed to propose a zinc phosphating method which enables the phosphating of higher proportions of surfaces of aluminum rich materials in a zinc phosphating bath than used before.

5. Neither during the R&D work for Gehmecker et al., nor during the R&D work for Schubach et al., I did observe cryolithe precipitation during the zinc phosphating, as the panels were mostly treated in a vertical position and thus no or nearly no precipitation could take place. Furthermore the panels had not been e-coated, which is mandatory in order to visualize the effect of cryolithe precipitation on the surfaces without using a scanning electron microscope. I did not use high proportions of aluminum rich materials in the zinc phosphating baths during the R&D work for Gehmecker et al., nor during the R&D work for Schubach et al.. Even during the zinc phosphating of through-put tests and then as tested later at customers, I did not observe cryolithe precipitation on phosphated surfaces. The effect of cryolithe precipitation on the surfaces to be phosphated had been observed later on after the filing of Gehmecker et al. and after the filing of Schubach et al. only, when higher proportions of aluminum rich materials were treated in a bath at a customer like carbodies and when there were horizontally arranged areas of the metallic surfaces in this bath. As far as I can remember, it was first observed in such a customer plant, where there was only a slow (poor) circulation of the bath liquid. Then, there may have occurred some problems with rough coatings of the e-coat. As can be seen from the examples of the cited

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publications, the core interest of the R&D work for Gehmecker et al. and for the R&D work for Schubach et al. was the zinc phosphating of steel surfaces and of surfaces of zinc coated steel.

6. In contrast thereto, the present invention is directed to the zinc phosphating of a mix of metallic surfaces, of which at least 5 % of these surfaces are surfaces of aluminum or aluminum alloys or both. The present application discloses a zinc phosphating system, which is untypical in this art, as up to 2003 for such systems zinc phosphating systems had been typically used which have a relatively high content of sodium and/or potassium of typically about 3.5 to about 8 g/L of sodium and/or potassium, whereas the present application discloses a content of sodium and/or potassium of up to 2.5 g/L in the zinc phosphating bath, wherein the potassium content is calculated in equivalent way in this total content. Further on, the free fluoride content used for the phosphating bath of the present application is typically about 0.100 to about 0.250 g/L, the total fluoride content is typically about 0.5 to about 3 g/L, and the complex fluoride content is typically about 0.5 to about 3 g/L too. A chemical system as of the present invention had not been used before 2003 according to my knowledge.

7. According to my knowledge of the present invention, there is still a precipitation especially of iron compounds like iron oxide and iron phosphate and a precipitation of aluminum compounds like cryolite. The important difference of the present invention to the prior art is, that by the change of the zinc phosphating system there is a retarded precipitation of the aluminum compounds. This retarded precipitation leads to the effect that the zinc phosphated metallic articles do not show the disturbing precipitation on their metallic and on their phosphated surfaces, as this would otherwise lead to rough e-coat surfaces and thus poor, non-uniform appearance of the paint. As the aluminum content of the aqueous phosphating solution does only dissolve about 0,020 g/L of aluminum cations, the further content of aluminum in the bath will precipitate later on, few minutes retarded, but because of the bath circulation not there, where the aluminum is pickled out of the metallic surfaces, but in other areas of the bath and behind the bath because of the circulation of the bath liquid. This effect sounds very easy, but for this finding, more than 10 years of continuous R&D work in zinc phosphating had to pass at Chemetall GmbH.

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8. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,

By Thomas Kelly

Date 10.10.09

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